

IN THE CLAIMS:

Please cancel Claims 28-33, without prejudice or disclaimer, and amend Claims 1, 2, 4-10, 12-14, 16, 17, 19, 22, and 24-27 as indicated below. The following is a complete listing of claims and replaces all prior versions and listings of claims in the present application:

Claim 1 (original): A method of measuring performance parameters of an imaging device, said method comprising the steps of:

 maintaining a test pattern image, said test pattern image comprising alignment features and image analysis features;
 imaging a test chart using said imaging device to form a second image, said test chart containing a representation of said test pattern image;

 registering said test pattern image and said second image using region based matching operating on said alignment features; and
 measuring said performance parameters by analysing said image analysis features.

Claim 2 (currently amended): The method as claimed in claim 1, wherein said imaging device is a camera, and said test chart is a self-luminous device displaying said test pattern image.

Claim 3 (original): A method of measuring performance parameters of a printer, said method comprising the steps of:

 maintaining a test pattern image, said test pattern image comprising alignment features and image analysis features;

 printing said test pattern image using said printer to form a test chart;

 imaging said test chart using a calibrated imaging device to form a second image;

 registering said test pattern image and said second image using region based matching operating on said alignment features; and

 measuring said performance parameters by analysing said image analysis features.

Claim 4 (currently amended): The method as claimed in any one of claims 1 [[to]] and 3, wherein different colour channels in said test pattern image and said second image are separately registered and analysed.

Claim 5 (currently amended): The method as claimed in any one of claims 1 ~~to 4~~ and 3, wherein said region based ~~mapping matching~~ uses overlapping blocks of image data from said test pattern image and said second image.

Claim 6 (currently amended): The method as claimed in any one of claims 1 ~~to 5~~ and 3, wherein said analysis features are said alignment features.

Claim 7 (currently amended): The method as claimed in any one of claims 1 to 6 and 3, wherein said region based matching is block based correlation.

Claim 8 (currently amended): The method as claimed in any one of claims 1 to 6 and 3, wherein said registering step comprises the sub-steps of:

performing block based correlation on said test pattern image and said second image to determine a displacement map for mapping pixels of said test pattern image to corresponding pixels of said second image;

interpolating said displacement map to form a distortion map; and

warping said test pattern image using said distortion map.

Claim 9 (currently amended): The method as claimed in any one of claims 1 to 8 and 3, wherein said analyzing measuring step includes comparing pixel values of corresponding pixels in said test pattern image and second image after said images have been registered.

Claim 10 (currently amended): The method as claimed in any one of claims 1 to 9 and 3, wherein said test pattern image is generated by the steps of:

- (a) dividing an image area into a predetermined number of areas;
- (b) dividing each of said areas into smaller areas;
- (c) within each area, assigning properties to at least one of said smaller areas, and designating the remainder of said smaller areas as areas;

- (d) generating pixel values for said at least one of said smaller areas, said pixel values being in accordance with said properties; and
- (e) repeating steps (b) to (d).

Claim 11 (original): The method as claimed in claim 10, wherein said properties are randomized.

Claim 12 (currently amended): The method as claimed in claim 10 ~~or 11~~, wherein said at least one of said smaller areas is selected randomly.

Claim 13 (currently amended): The method as claimed in ~~any one of claims~~ claim 10 to 12, wherein said properties are one or more of:

- colour;
- slowly varying colour;
- pattern with predetermined frequency distribution;
- pattern with predetermined orientations; and
- pseudo-random noise.

Claim 14 (currently amended): A method ~~of generating a~~ as claimed in ~~claim 1, wherein said test pattern, said method comprising~~ image is generated through the steps of:

- (a) dividing an ~~image~~ area into a predetermined number of smaller areas;

- (b) ~~dividing each of selecting at least of said areas into smaller areas;~~
- (c) ~~within each area, assigning properties to at least one of said generating pixel values for the selected smaller areas, and designating the remainder of said smaller areas as areas said pixel values being in accordance with assigned properties;~~
- (d) ~~generating pixel values for said at least one of said designating each of the unselected smaller areas, said pixel values being in accordance with said properties as areas; and~~
- (e) repeating steps [(b)] (a) to (d) iteratively for each of the areas.

Claim 15 (original): The method as claimed in claim 14, wherein said properties are randomized.

Claim 16 (currently amended): The method as claimed in claim 14 ~~or 15~~, wherein said at least one of said smaller areas is selected randomly.

Claim 17 (currently amended): The method as claimed in ~~any one of claims~~ ~~claim 14 to 16~~, wherein said properties are one or more of:

- colour;
- slowly varying colour;
- pattern with predetermined frequency distribution;
- pattern with predetermined orientations; and
- pseudo-random noise.

Claim 18 (original): A method of analysing images, said method comprising the steps of:

receiving first and second images, said second image being a distorted version of said first image;

labeling pixels of said first image with pixel labels;

determining distortion parameters for aligning said first image with said second image;

warping at least said pixel labels using said distortion parameters; and

associating said pixel labels with corresponding pixels in said second image, wherein said labels provide information on a state of pixels in said second image before distortion.

Claim 19 (currently amended): The method as claimed in ~~any one of claims~~ claim 10 to 18, wherein a test pattern corresponding to said test pattern image is a dyadic test pattern.

Claim 20 (original): Apparatus for measuring performance parameters of an imaging device, said apparatus comprising:

means for maintaining a test pattern image, said test pattern image comprising alignment features and image analysis features;

means for receiving a second image, said second image being an image captured by said imaging device of a test chart, and said test chart containing a representation of said test pattern image;

means for registering said test pattern image and said second image using region based matching operating on said alignment features; and

means for measuring said performance parameters by analysing said image analysis features.

Claim 21 (original): Apparatus for measuring performance parameters of a printer, said apparatus comprising:

means for maintaining a test pattern image, said test pattern image comprising alignment features and image analysis features;

said printer for printing said test pattern image to form a test chart;

a calibrated imaging device for imaging said test chart to form a second image;

means for registering said test pattern image and said second image using region based matching operating on said alignment features; and

means for measuring said performance parameters by analysing said image analysis features.

Claim 22 (currently amended): Apparatus as claimed in claim 20 wherein
said means for generating maintaining a test pattern, said apparatus comprising image
comprises:

means for dividing an image area into a predetermined number of smaller
areas;

means for dividing each selecting at least one of said areas into smaller
areas;

means for assigning properties to at least one of said generating pixel values
for the selected smaller areas within each area and designating the remainder of said
smaller areas as areas, said pixel values being in accordance with assigned properties;

means for generating pixel values for said at least one of said designating
each of the unselected smaller areas, said pixel values being in accordance with said
properties as areas; and

means for repeatingly iteratively passing control to said means for dividing
each of said areas, said means for assigning properties selecting, and said means for
generating pixel values, and said means for designating.

Claim 23 (original): Apparatus for analysing images, said apparatus
comprising:

means for receiving first and second images, said second image being a
distorted version of said first image;

means for labeling pixels of said first image with pixel labels;

means for determining distortion parameters for aligning said first image with said second image;

means for warping at least said pixel labels using said distortion parameters;

and

means for associating said pixel labels with corresponding pixels in said second image, wherein said labels provide information on a state of pixels in said second image before distortion.

Claim 24 (currently amended): A computer readable medium ~~comprising~~ storing a computer program for measuring performance parameters of an imaging device, said computer program when executed on a computing device performs the steps of:

maintaining a test pattern image, said test pattern image comprising alignment features and image analysis features;

imaging a test chart using said imaging device to form a second image, said test chart containing a representation of said test pattern image;

registering said test pattern image and said second image using region based matching operating on said alignment features; and

measuring said performance parameters by analysing said image analysis features.

Claim 25 (currently amended): A computer readable medium ~~comprising~~ storing a computer program for measuring performance parameters of a printer, said computer program when executed on a computing device performs the steps of:

 maintaining a test pattern image, said test pattern image comprising alignment features and image analysis features;

 printing said test pattern image using said printer to form a test chart;

 imaging said test chart using a calibrated imaging device to form a second image; registering said test pattern image and said second image using region based matching operating on said alignment features; and

 measuring said performance parameters by analysing said image analysis features.

Claim 26 (currently amended): A computer readable medium ~~comprising a computer program for generating a~~ as claimed in claim 24, wherein said test pattern, ~~said computer program when executed on a computing device performs image is generated~~ through the steps of:

- (a) dividing an image area into a predetermined number of smaller areas;
- (b) ~~dividing each~~ selecting at least one of said areas ~~into~~ smaller areas;
- (c) ~~within each area, assigning properties to at least one of said generating~~ pixel values for the selected smaller areas, ~~and designating the remainder of said smaller areas as areas~~ said pixel values being in accordance with assigned properties;

(d) generating pixel values for said at least one of said designating each of the unselected smaller areas, said pixel values being in accordance with said properties as areas; and

(e) repeating steps [(b)] (a) to (d) iteratively for each of the areas.

Claim 27 (currently amended): A computer readable medium comprising storing a computer program for analysing images, said computer program when executed on a computing device performs the steps of:

receiving first and second images, said second image being a distorted version of said first image;

labeling pixels of said first image with pixel labels;

determining distortion parameters for aligning said first image with said second image;

warping at least said pixel labels using said distortion parameters; and

associating said pixel labels with corresponding pixels in said second image, wherein said labels provide information on a state of pixels in said second image before distortion.

Claims 28 - 33 (canceled).